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ABSTRACT

This paper describes some of the issues involved in refining Internet-based, asynchronous conference forums to meet the learning needs of adult students in distant inservice and graduate courses. The paper focuses on an analysis of existing instruction delivery systems and explores identification of optimal environments for inservice professional development courses. Topics addressed include: (1) the traditional campus; (2) virtual campuses; (3) the adult as a student; (4) needs of adults as online learners, including flexibility of schedule, direct and immediate applicability of material, positive connection to previous experiences, problem-solving orientation, and self-direction; (5) dangers inherent in an online environment; (6) the graduate education programs at Nova Southeastern University (Florida) School of Computer and Information Sciences (SCIS); (7) the Learning Place at SCIS; (8) distant instruction at SCIS; and (9) moving toward optimization. (Contains 20 references.) (MES)

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Defining a Distant Environment for Teacher Education

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Abstract: Virtual classrooms are rapidly becoming alternate acceptable delivery systems. One of the major challenges facing professors in higher education today is the creation of the best possible adult learning environment in our cyberspace classrooms. This paper describes some of the issues involved in refining Internet-based, asynchronous conference forums to meet the learning needs of adult students in distant inservice and graduate courses.

Introduction

At the crossroads of real and virtual colleges, limitless opportunities for professional development and lifelong learning are made possible. Academic institutions are faced with decisions about where to focus their human and fiscal resources. Every instruction delivery system (IDS) has its strengths and weaknesses. This paper will focus on an analysis of existing IDSs and attempt to make strides toward the identification of optimal environments for in-service professional development courses. We are addressing the needs of classroom teachers/graduate students who have selected to take part in the learning process based upon a job requirement or a personal want. These remarks may be generalized to most adult post-baccalaureate learning environments.

Traditional Campus

The traditional college campus is located in buildings to which students must drive or take a bus or train assuming they do not live on campus. Classroom instructors generally require that students be present at specified times and dates for at least 14 meetings per term. Even when attendance is optional, there is an expectation that students will attend class. Libraries, bookstores and administrative offices, where matters of registration, financial aid, and record maintenance are attended to are other familiar components.

Traditional, gainfully employed graduate students live within commuting distance of the campus. They invest time and money in travel, parking, and in walking to the classroom. Most are classroom teachers or substitutes; some serve in administrative capacities. Students whose job responsibilities or time frames change during a term are often forced to withdraw from classes. Students whose jobs end during a course of studies must choose between keeping job searches local or abandoning the program. Once a commitment is made to pursue a degree program, the student is "planted" in the physical location. In today's world of rapidly changing jobs, this is a frequently occurring conundrum. Many adult students have child-rearing responsibilities as well. Going to the campus makes it necessary to hire and train a caretaker. An element of stress exists as the student waits each week for the caretaker to show up. Many students report that they dash home from work, make supper, supervise homework, and only then begin the process of being students.

Class organization takes several forms. Graduate education classes are best when limited to no more than 24 students. However, class size is often dictated by enrollment not best practice. Classes with approximately 30 students and one professor enable some interaction mostly for the more aggressive and/or articulate students. Large lecture classes with up to hundreds of students are strictly professor to student delivery systems. In some places, members of these very large groups, divided into breakout or recitation groups, meet with a doctoral student who works under the direction of the lecturing professor. Lab classes provide hands-on learning with and without instructor guidance. Almost all on-campus courses are time bound.

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Virtual Campuses

Distance learning has taken a variety of forms over the years. Recently, the focus appears to be on web-based courses using text-only, text and still images, or in some cases, text, video and audio (Abramson, 1998). A common thread obtains whether one uses one of these Internet-based forms or the older videotape, television, satellite broadcasting or even posted mail for distance learning. That is, the student does not need to be in the same physical space as the professor. Also, increasingly, course offerings are asynchronous, meaning that the student may "attend" at a different time than the instruction is presented. Anytime/anyplace learning has become a major player in adult education (Gibson, 1998), in general, and in teacher education to a lesser degree.

Much has been written and discussed about the learning needs and learning styles of the distant student and how curriculum may be presented and revised to meet these needs. The literature is replete with concerns over the loss of the personal touch and real-time teacher/student interaction. Issues such as technical support, faculty preparedness, copyrights, testing, attendance, class size and authenticity of authorship are under heavy discussion alongside course delivery and quality of interactivity. The fact remains that there is a new player in the game so our options are to master the rule or be left on the sidelines.

The Adult as a Student

All classroom teachers involved with in-service professional development may be classified as adult learners. However, just because most professional development takes place in a college or university does not mean that the teachers become college students. Differences between traditional college students and adult learners will be approached from four perspectives: age, needs, desires, and goals (Bowden & Merritt, 1995). The traditional college student is an 18 to 25 year old person who continued on to higher education immediately or very shortly after completion of high school. "Adult" students can range in age from their late 20s through their 70s or beyond and typically have been separated from an educational environment for a number of years (McNair, 1994).

The needs of these older students are influenced by a constellation of factors, including relationship responsibilities as parents and spouses, organizational affiliations, and commitments that place demands on their time and financial resources (Boucouvalas & Krupp, 1989). Perhaps as a result of these multiple and often conflicting needs, adults as students typically desire two things from their learning environment: a direct connection to their past experiences or current concerns, and a pragmatic, problem-solving approach within the learning environment (Brookfield, 1989).

Adults perhaps can best be understood as students in terms of their goals for participating in an educational program. Although the specific goals cover a very wide spectrum, in general, the immediate, practical applicability of material is extremely important to the older student (Bowden & Merritt, 1995). Knowles (1977) observed that, for the adult student the "...time perspective changes from one of postponed application of knowledge to immediacy of application, and accordingly his orientation toward learning shifts from one of subject-centeredness to one of problem-centeredness" (p. 39).

The educational requirements of the adult learner extend beyond the rather practical considerations identified by Bowden and Merritt (1995), Boucouvalas and Krupp (1989), and Brookfield (1989). There is evidence that the process of assimilating knowledge is different for the older learner than for the younger student. Adults approach the learning environment in a different fashion, expect different things from that environment, and react to the various aspects of the environment differently than the traditional college student. Zemke and Zemke (1995) observed that, although a single-faceted theory was inadequate for identifying the unique needs of the adult as a learner, some general principles regarding the adult as a student are apparent. Timing is vital in adult education; adults usually have rather small 'windows-of-opportunity' during which they are receptive to learning a new task. The learning process must incorporate practical application of the subject matter and be problem-centered. Finally, facilitation, as opposed to the lecture approach, is much more likely to be successful for the older student.

Self-directed, autonomous learning is important to the adult student and should be acknowledged by the actions of the professor (Tennant, 1991). Although the need for self-directed learning is widely accepted within the literature, Griffin (1991), in an exploration of the impact of social theory on adult learning, identified a very interesting paradox regarding the goals for adult learning. The impetus for an adult to return to an educational setting is often related to the need to adapt to changing circumstances in the workplace or greater environment. At the same time, adult learning practices are predicated on the need for self-direction. An adult learning environment often must meet the somewhat contradictory goals of addressing the needs presented by external forces such as employers while at the same time affording the student maximimum control over the learning process.

The Adult as an Online Learner

In general, the needs of the adult as a student potentially match well with the strengths of an Internet-based online learning environment. A point-by-point comparison of the general needs of adult as learners as outlined above with the characteristics of an online learning environment follows.

Flexibility of Schedule. An online environment can offer the student a time- and place-independent academic setting. Owston (1997) reviewed the online offerings available from several institutions of higher education located in both Europe and the United States. He uncovered numerous examples of programs specifically targeted at providing adult students with educational opportunities that could be accommodated within a busy schedule of family, social, and work responsibilities.

Direct and Immediate Applicability of Material. Computer-enhanced learning environments can simulate the application of material that would be impossible to include in a traditional classroom setting because of safety, cost, or moral issues. Hatfield (1996) described the use of computer-simulated environment used to help pre-service mathematics teachers experiment with teaching approaches they would have been hesitant to try if working with live students. In a virtual classroom setting, these prospective teachers were able to experiment with the effective use of educational approaches such as mathematical modeling, group problem solving, and the use of manipulatives. This virtual experience enabled the students to grasp the concepts and internalize the thought processes underlying the application of these pedagogical approaches more thoroughly than students learning the same material in a traditional setting. The multimedia-based virtual classroom offered a realistic setting in which the student felt safe to experiment with new approaches, thereby promoting greater personal involvement in the instruction.

Positive Connection to Previous Experiences. Internet-based online environments significantly change the role of the student in the educational process. The relationship between instructor and student is altered; Kilian (1997) observed that Internet-based education is, in fact, changing traditional academic roles by encouraging an egalitarian, mentor-apprentice relationship between teacher and student. Perhaps more significantly, the relationship between student and subject matter is modified significantly within this environment. Dyrli and Kinnaman (1996) observed that in the Internet-based online environment students can become much more involved as information producers rather than information users as is typical in the conventional classroom setting.

Problem-Solving Orientation. An Internet-based online learning environment is essentially problem-oriented and active in nature. Hazari and Schno (1999) outlined how the interactive tools such as forms, threaded discussion forums, and interactive 'chat' rooms available in a World Wide Web based environment can promote a problem oriented environment by stimulating interaction with course content, instructor, and other students.

Self-Direction . The role of the learner in an Internet-based online environment is inherently one of increased power and control. As detailed above, the increased flexibility in scheduling, capacity to experiment in a safe, virtual environment, and active orientation combine to make the student more a partner in the learning process than a passive receipient of knowledge. The nature of personal computer systems in general and the Internet in particular, furthermore, promote personal independence by the control in sequencing and pacing they afford the user.

Dangers Inherent in an Online Environment

Each of the characteristics of the adult learner discussed above can present challenges to the instructor, especially in an online environment. The need for flexibility in scheduling often manifests as missed assignments, inability to participate in group learning experiences, and deferred completion of courses. The demand for direct and immediate applicability of material may, in fact, be a retreat into concretism, while the desire for a positive connection to past experiences might mask a resistance to new ideas. The need for a problem-solving orientation, often expressed as, *I'm a 'hands-on' learner*, can be an unwillingness to engage in a rigorous thought process. Similarly, the demand for a self-directed learning environment might be a sophisticated term to describe a power struggle between student and teacher.

The online learning environment is not a panacea for the adult student. Although an Internet-based delivery system may address many of the needs of the older student, this approach to education raises concerns as well as offers solutions.

Many of the challenges the older learner presents as a student are potentially aggravated by the online environment. Brunt (1996) emphasized the need of adult learners for personal support, especially early in the

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learning process. Since adult students bring with them *baggage*, such as personal difficulties, financial hardship, lack of confidence and negative memories of previous learning experiences, the need for personal support can be crucial. He warned that, although distance approaches enhanced by technology such as the Internet, might be attractive to the adult student for several reasons, many adult students might not be able to benefit because of the lack of meaningful, personal support.

A headlong rush into replacing traditional classrooms with online learning environments for adult students is certainly unwarranted. Hara and Kling (1999) quite effectively cataloged the potential frustrations for both students and instructors involved in a Web-based online learning environment. Although online environments present the potential to quite effectively meet the needs of the older student, there do appear to be an equal number of potential hazards.

Graduate Education Programs at SCIS

Let us look at the environments within which we teach across distances. Although our graduate programs are all distant ones, we have a real campus at which most of the professors may be found daily. While the students are distant, the faculty is remarkably collaborative. We network extensively and support one another as we strive to build the best possible programs for learning. Our classes are presented in three different formats.

- MCTE is a totally on-line masters program in computing technology in education. At this writing, even orientation is an on-line experience. Faculty and students never meet face-to-face and students do not know one another. There are four 12-week terms each year. Students who take two courses each term can complete the program in 18 months.
- DCTE Institute is a partially on-line doctoral program in computing technology in education. Faculty and students meet for one week (forty hours) each five-month term. There are two terms each year, separated by a month. Students take two courses and one project course for four terms before beginning the dissertation phase of the program. The day before a student's first term is an on-campus orientation experience. All further interaction is computer-based.
- DCTE Cluster mirrors the Institute with one exception. Instead of the two weeks on campus, students and faculty meet for four weekends, at the beginning and middle of each term (20 hours plus 20 hours).

The Learning Place at SCIS

The physical entity that replaces the classroom during distant course components is the computer. Each professor has an office and a resource center located on his/her home page. See, for example, http://www.scis.nova.edu/~abramson and http://www/scis.nova.edu/~ellist. There, one may find a photo of the professor, and, for some courses, link to images of classmates, thus reinforcing "real people" identities. Syllabi are available so students may preview a course before signing up and may download clean copies should theirs become lost. PowerPoint slide shows created to support classroom presentations are easily saved as html documents and linked to the home page. Alternately, useful links to research gateways may be provided for student research.

Our classrooms in cyberspace are multi-threaded forums, which are elaborate, interactive bulletin boards. When the professor has the time to set up properly, classes begin with established sets of discussion topics to which students may respond on an as-needed basis. The beauty of the system is that it is there whenever it is looked for; it cannot be accidentally erased. All remarks posted to the forum are available to everyone in the class. If anyone wishes to retract a posting, the professor can do it with a delete command. The professor may also correct spelling and punctuation if indicated. The intrinsic value of the forum is identical to any class: It is a combination of the professor and the students and the efforts put forth in the learning process.

Keeping within the guiding principle of computer-based, distance learning, there is a vehicle for submission of homework assignment electronically called Electronic Student, Electronic Teacher (ESET). This application allows students to upload (and thus submit assignments electronically) different kinds of documents. It also provides for acknowledgement and grade tracking. Importantly, should an instructor ever misfile or misplace a student assignment, another copy may be downloaded since everything is archived.

Another heavily used tool is electronic mail (e-mail). At the beginning of each new class, an Address Book is set up so that messages may be sent to the entire group by typing the class alias in the TO: line (e.g. IDS0399). Of course, personal communications and assignment feedback are easily carried out with e-mail. It is a real thrill to send a message to Japan or Israel and to find a response from the student the next morning. These asynchronous

(anytime) tools make for much more immediate satisfaction than do setting and keeping mutually acceptable meeting times (Abramson, 1999).

How do students feel about these options? Student satisfaction runs extremely high as do completion rates for all programs. All three formats have grown in double-digit rates since 1995.

Distant Instruction at SCIS

SCIS, as a graduate school, is less than 15 years old. We like to believe that we move with the times and that our use of distant modalities is state-of-the-art. One of the unwritten rules that has been handed down anonymously is that the computer (and not video or TV) is our instruction medium. That does not rule out the use of textbooks or other ancillary materials. As Feenberg (1999) reports, writing is the basic medium of online expression, the skeleton around which other technologies and experiences musts be organized to build a viable learning environment. Each course is accompanied by a syllabus that explains required work in very great detail. Syllabi are updated constantly to reflect student feedback and technology changes.

The masters courses tend to be subject-content oriented and the forums structured. Commonly, the professor will post questions relating to the different readings and students are expected to respond, amplify and extent the thoughts of others. Doctoral forums tend to be more flexible. The professor or any student may open a discussion and everyone is then free to jump in. Our experiences have shown two very important constants: The quality of the interaction is a direct function of the quality of students in that particular section. Also, the seriousness with which students approach the collaborative explorations is a function of how their contributions relate to the course grade.

For the most part, student work is evaluated by performance in the form of written documents and/or computer product development depending on the particular course. Using constructivist, performance evaluations largely negates questions that are often raised about cheating and integrity in distance learning.

Moving Toward Optimization

To summarize, let us repeat some assumptions about adult learners that hold true for classroom teachers seeking professional development:

- Students enroll in classes because of a perceived need or want.
- Mastery of course material is essential if the need or want is to be met.
- Nothing magic occurs by bringing one's body to class.
- Different people have different communication and interaction needs.
- Time spent in traffic is better spent doing homework.
- When stress is minimized, receptivity to new material is greater.
- Job requirements take precedence over school requirements.
- Home demands compete with school demands.

We concur with Phipps and Merisotis (1999) that technology cannot replace the human factor in higher education and hope that our face-to-face meetings provide enough real contact to "carry" the learning process. Over the years, we have learned to read emotional needs within printed messages (Feenberg, 1999) as we might from student facial expressions. As a collaborative faculty, we work to develop the qualities that make a good distance-learning teacher (Roblyer, 1998). Despite our best efforts, we are still unable to define optimal environments. Nevertheless, we hope the variables identified and discussed will move the profession in the direction of best practices for the distant, professional development of teachers.

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